

Prevalence of ultra-processed food, alcohol and tobacco consumption and chronic non-communicable diseases in Rio Branco, capital city of the state of Acre, Brazil, 2019: comparative analysis of two epidemiological surveys

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ABSTRACT

Objective: To describe, in a comparative manner, the prevalence of chronic non-communicable diseases and ultra-processed food, alcohol and tobacco consumption, estimated by the Chronic Disease Risk and Protective Factors Surveillance Telephone Survey (Vigitel) and National Health Survey (PNS), in Rio Branco, capital city of the state of Acre, Brazil. **Methods:** This was a cross-sectional study on sociodemographic, health and lifestyle data from surveys conducted in 2019. Prevalence and 95% confidence intervals (95%CI) were described, and percentage difference was calculated. **Results:** Of the 3,037 individuals assessed, similar prevalence, with difference between Vigitel (60.3%; 95%CI 56.2;64.3) and PNS (70.8%; 95%CI 67.4;73.9) regarding people of Brown race/skin color was found. In the stratification by sex, it could be seen percentage difference between the surveys, regarding obesity (male= 6.5%; female= 0.4%), smoking (male= 4.0%; female= -1.5%) and alcohol abuse (male= 6.9%; female= -2.5%), although with overlapping 95%CI. **Conclusion:** The estimates assessed in both surveys were similar.

Keywords: Population Surveys; Cross-sectional Studies; Epidemiological Monitoring; Chronic Disease; Prevalence.

INTRODUCTION

Chronic non-communicable diseases (NCDs) are an important public health problem worldwide. In Brazil, in addition to compromising the quality of life of a significant portion of the population and contributing to health service overload, NCDs accounted for approximately 70% of deaths in 2016. Population surveys, such as the Chronic Disease Risk and Protective Factors Surveillance Telephone Survey (Vigitel) and the National Health Survey (PNS), help in the monitoring of NCDs in Brazilian municipalities, although they present relevant methodological differences.¹⁻³

The PNS was a population-based survey, using face-to-face data collection, while Vigitel was conducted by telephone and, therefore, implied lower cost and operational complexity.

In the municipality of Rio Branco, capital city of the state of Acre – one of the Brazilian capitals with the lowest landline coverage – there are concerns about the representativeness of Vigitel data and possible bias resulting from this limitation. However, the comparative assessment of the databases of both surveys can contribute to a better understanding of the methodological problems in these studies in the municipal context.⁴

The objective of this study was to compare the prevalence of NCDs and ultra-processed foods, alcohol and tobacco consumption, estimated by Vigitel and PNS in Rio Branco, state of Acre, Brazil.

METHODS

This was a cross-sectional study with secondary data retrieved from Vigitel and PNS in 2019, made available by the Ministry of Health, with open access, in their respective websites.^{5,6} Both databases were accessed on May 4, 2021.

Rio Branco is located in the Northern region of Brazil and it is the leading financial, corporate, political and cultural center in the state of Acre, with a high human development index (HDI= 0.727), according to the last Atlas of Human Development in Brazil, in 2010.^{7,8} In 2020, Rio Branco had a population of 413,418 inhabitants,²

Research contribution	
Main results	Similar prevalence of ultra-processed food, alcohol and tobacco consumption and non-communicable chronic diseases was identified when comparing Vigitel and the National Health Survey in Rio Branco, state of Acre.
Implications for services	Due to absence of face-to-face surveys in remote regions with low landline coverage, such as Rio Branco, telephone surveys can be useful for monitoring actions and improving case and service management.
Perspectives	Conducting new research, which compares regions with low landline coverage with those with wide coverage, can help elucidate the validity of chronic disease monitoring measures by means of telephone survey.

46.2% of the total population of the state in the period, and occupied a territory of 8,835,154 km². In 2019, 91.8% of the municipality's population lived in the urban area and, according to the 2010 Demographic Census, the schooling rate in the age group 6 to 14 was 95.1%.^{7,9} Regarding health indicators, the infant mortality rate was 11.1 deaths per 1,000 live births in 2019. In 2020, Rio Branco had 837 health facilities and of these, 232 were within the Brazilian National Health System (SUS).^{7,10}

Vigitel is a telephone survey, conducted in two stages: first, (i) a systematic draw of local landline telephone, and then, (ii) the identification of the lines that were drawn, regarding their eligibility. Business and inactive phone lines or those that did not answer the phone call, were

not eligible. Thus, a probabilistic sample of the adult population (≥ 18 years) residing in Brazilian capitals was obtained. With regard to the PNS, it is a household survey, conducted in three stages: (i) a draw of census tracts [primary sampling units (PSU)], (ii) households (secondary units) and (iii) a resident aged 15 years or older (tertiary units). Further information about the PNS method is available in another publication.²

Respondents aged 18 years or older were eligible for this study. Those under 18 years of age, pregnant women and women who did not know if they were pregnant were excluded. In addition, the individuals who were taking part in both surveys (Vigitel and PNS) but did not have complete records, were excluded.

The sociodemographic variables analyzed were sex (female; male), age group (in years: 18 to 24; 25 to 39; 40 to 59; 60 or older), race/skin color (White; Black; Asian; Brown; Indigenous) and schooling (in years of study: 0 to 8; 9 to 11; 12 and more). The variables related to health status were self-reported, based on a previous diagnosis of diabetes *mellitus* (no; yes), hypertension (no; yes), overweight (no; yes) and obesity (no; yes), with a physician confirmation. The lifestyle variables were smoking (no; yes), alcohol abuse (no; yes), ultra-processed foods (no; yes) and soft drink (no; yes) (Box 1) consumption.

Data were analyzed using a statistical software for analyzing complex samples, the Statistical Package for the Social Sciences (SPSS), version 26.0. The overall prevalence of sociodemographic, health and lifestyle characteristics, stratified by sex, and 95% confidence intervals (95%CI), were estimated. The prevalence of Vigitel was weighted (rake method) using estimates of sex, age and education of the population, for the municipality of Rio Branco in 2019, aiming to standardize the distribution of the interviewed population with that estimated by the Demographic Census.³ The PNS estimates were weighted by means of household weight, adjustment for non-response, sex and distribution of the total population by sex and age. The differences were calculated in

percentage points, considering the proportion of each sample, Vigitel and PNS, and this difference was observed when there was no overlapping 95%CI.^{1,11,12}

The secondary data used in this article are in the public domain, made available by the Ministry of Health in an unrestricted manner and without personal identification, therefore it was not necessary to submit the research project to a Research Ethics Committee.

RESULTS

A total of 4,262 individuals (2,829 from Vigitel and 1,433 from PNS) were considered eligible. Of these, 3,037 individuals aged 18 years or older who had completed the interview (1,812 from Vigitel and 1,225 from PNS) were included in this study. 52.4% (95%CI 48.3;56.5) in Vigitel and 53.3% (95%CI 48.9;57.7) in PNS were female, and it could be seen a difference in the prevalence of -0.9%, with overlapping 95%CI (Table 1).

There was a difference between the surveys regarding the prevalence of race/skin color. The prevalence of people of mixed race/skin color was lower in Vigitel (60.3%; 95%CI 56.2;64.3), compared to that found in PNS (70.8%; 95%CI 67.4;73.9). There was no difference between the prevalence estimated by the surveys regarding the other sociodemographic variables such as health and lifestyle, and there was no overlapping of 95%CI values.

When the variables were stratified by sex, no differences in prevalence between Vigitel and PNS were observed in any of the variables investigated (Table 2). Although there was overlapping 95%CI, the difference in the prevalence of obesity between the two surveys was 3.2%, and it could be seen prevalence of 6.5% among males and 0.4% among females.

The differences in the prevalence of smoking and alcohol abuse, between Vigitel and PNS surveys, were 4.0% and 6.9%, in males, and -1.5% and -2.5% in females, respectively.

Box 1 – The National Health Survey and Chronic Disease Risk and Protective Factors Surveillance Telephone Survey variables, 2019

Variables	Questions		
	Vigitel/2019 ^a	PNS/2019 ^b	Comparison
Sociodemographic			
Sex	Sex: 1 () Male / 2 () Female	Sex: 1 () Male/ 2 () Female	Similar questions
Age	How old are you? (you must be ≥18 years old and <150) ____ years old. The variable was re-coded according to age in years.	Age (calculated based on date of birth). The variable was re-coded according to age in years.	Similar questions
Race/skin color	What is your race/skin color? 1 () White 2 () Black 3 () Asian 4 () Brown 5 () Indigenous	Race or skin color? 1 () White 2 () Black 3 () Asian 4 () Brown 5 () Indigenous	Similar questions
Interviewee's schooling	Schooling based on the following questions: Up to which grade or level did you study? 1 () Primary School 2 () Middle School Entrance Examination 3 () Middle School 4 () Elementary Education or Supplementary Elementary Education 5 () Standard High School or Technical High School or Scientific High School or Supplementary High School Education 6 () Higher Education 7 () Postgraduate Education (Specialization, Master's Degree, Doctoral Degree) 8 () Never studied What was the highest school grade you finished? 1 st () 2 nd () 3 rd () 4 th () 5 th () 6 th () 7 th () 8 th or above Are you currently taking a course/ attending school or taking someone to do a course/attend school? 1 () Yes / 2 () No	What is your major? What grade level/ semester are you in? What was the highest level of education/course you attended? How long did this course last? What was the last grade level/ semester you completed, and was approved, in this course?	Vigitel database includes an educational indicator, with the following categories, in years of study: 0 to 8; 9 to 11; 12 and over. For the construction of this indicator in the PNS, the aforementioned questions were used. and based on them, a variable 'years of study' was created. Thus, it was possible to categorize it for schooling, consistent with Vigitel.
Health			
Diabetes <i>mellitus</i>	Has a doctor ever told you that you have diabetes? 1 () Yes / 2 () No	Has any doctor ever given you a diagnosis of diabetes <i>mellitus</i> ? 1 () Yes / 2 () No	Similar questions
Arterial hypertension	Has a doctor ever told you that you have hypertension? 1 () Yes / 2 () No	Has any doctor ever given you a diagnosis of Arterial hypertension? 1 () Yes / 2 () No	Similar questions

To be continued

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Box 1 – The National Health Survey and Chronic Disease Risk and Protective Factors Surveillance Telephone Survey variables, 2019

Variables	Questions		
	Vigitel/2019 ^a	PNS/2019 ^b	Comparison
Overweight and obesity	<p>Do you know how much you weight (even if it is an approximate value)? (only ≥ 30 kg and < 300 kg) ____ kg are accepted</p> <p>Do you know your height? (only ≥ 1.20 m and < 2.20 m) ____ m ____ cm are accepted</p>	<p>Height, first measurement: ____ cm; height, second measurement: ____ cm;</p> <p>Weight, first measurement: ____ kg; weight, second measurement: ____ kg;</p>	<p>Vigitel database includes an overweight indicator, being considered as BMI $> 25 \text{ kg/m}^2$ and obesity $> 30 \text{ kg/m}^2$. For the construction of this indicator in the PNS, the variables 'final weight, in kg' and 'final height, in cm' were used, based on the questions presented, and based on them the 'BMI' and the overweight indicator were calculated, being considered as BMI $> 25 \text{ kg/m}^2$ and obesity $> 30 \text{ kg/m}^2$.</p>
Lifestyle			
Smoking	<p>Do you currently smoke?</p> <p>1 () Yes, every day 2 () Yes, but not every day 3 () No</p>	<p>Do you currently smoke any tobacco products?</p> <p>1 () Yes, every day 2 () Yes, but not every day 3 () Do not smoke currently</p>	Similar questions
Alcohol abuse	<p>For women: in the last 30 days, did you consume four or more doses of alcoholic drinks on a single occasion? (four doses of alcoholic drinks are equivalent to four cans of beer, four glasses of wine or four doses of cachaça, whisky or any other distilled alcoholic liquor) (only for women)</p> <p>1 () Yes / 2 () No</p> <p>For men: in the last 30 days, did you consume five or more doses of alcoholic drinks on a single occasion? (five doses of alcoholic drinks are equivalent to five cans of beer, five glasses of wine or five doses of cachaça, whisky or any other distilled liquor)</p> <p>1 () Yes / 2 () No</p>	<p>In the last 30 days, did you consume five or more doses of alcoholic drinks on a single occasion? (one dose of alcoholic drink is equivalent to one can of beer, one glass of wine or one dose of cachaça, whisky or any other distilled alcoholic liquor)</p> <p>1 () Yes / 2 () No</p>	The PNS considers five or more doses for both sexes.

To be continued

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Box 1 – The National Health Survey and Chronic Disease Risk and Protective Factors Surveillance Telephone Survey variables, 2019

Variables	Questions		
	Vigitel/2019 ^a	PNS/2019 ^b	Comparison
Ultra-processed food consumption	<p>Now I am going to list some industrialized foods and I would like you to tell me if you have any of them yesterday (when you woke up until you went to bed)</p> <p>a. Soft drink 1 () Yes / 2 () No</p> <p>b. Carton or canned juice 1 () Yes / 2 () No</p> <p>c. Powdered juice 1 () Yes / 2 () No</p> <p>d. Chocolate milk 1 () Yes / 2 () No</p> <p>e. Flavored yogurt 1 () Yes / 2 () No</p> <p>f. Packet snacks (or chips) or savory biscuit/crackers 1 () Yes / 2 () No</p> <p>g. Sweet/wafer biscuits, filled biscuits or packet cupcakes 1 () Yes / 2 () No</p> <p>h. Chocolate, ice cream, gelatin, flan or other industrialized dessert 1 () Yes / 2 () No</p> <p>i. Sausage, mortadella or ham 1 () Yes / 2 () No</p> <p>j. Sliced bread, hot dog or hamburger buns 1 () Yes / 2 () No</p> <p>k. Mayonnaise, ketchup or mustard 1 () Yes / 2 () No</p> <p>l. Margarine 1 () Yes / 2 () No</p> <p>m. Instant noodles, packet soup, frozen lasagna or another frozen prepared food meals (takeout) 1 () Yes / 2 () No</p>	<p>Now let's talk about your eating habits. I am going to ask you a few questions about industrialized foods you consumed yesterday.</p> <p>Yesterday, did you drink or eat:</p> <p>a. Soft drink 1 () Yes / 2 () No</p> <p>b. Carton or canned juice or powdered juice? 1 () Yes / 2 () No</p> <p>c. Chocolate milk or flavored yogurt? 1 () Yes / 2 () No</p> <p>d. Packet snacks or savory biscuits/crackers? 1 () Yes / 2 () No</p> <p>e. Sweet or filled biscuits/crackers or packet cupcake? 1 () Yes / 2 () No</p> <p>f. Ice cream, chocolate, gelatin, flan or other industrialized dessert? 1 () Yes / 2 () No</p> <p>g. Sausage, mortadella or ham? 1 () Yes / 2 () No</p> <p>h. Sliced bread, hot dog or hamburger buns? 1 () Yes / 2 () No</p> <p>i. Margarine, mayonnaise, ketchup or other industrialized sauces? 1 () Yes / 2 () No</p> <p>j. Instant noodles, packet soup, frozen lasagna or another frozen prepared food meals (takeout)? 1 () Yes / 2 () No</p>	<p>Based on the questions presented, an indicator of 'consumption of five or more ultra-processed foods on the previous day' was constructed.</p>
Soft drink consumption	<p>How many days a week do you usually drink soda or artificial juice?</p> <p>1 () 1 a 2 days a week 2 () 3 a 4 days a week 3 () 5 a 6 days a week 4 () Every day (including Saturday and Sunday) 5 () Almost never 6 () Never</p>	<p>How many days a week do you usually drink soda? ____ Days; 0. Never or less than once a week.</p>	<p>Vigitel took into account the consumption of soft drinks and artificial juice. The PNS took into account only the consumption of soft drinks. In both databases, an indicator was created taking into consideration how to control the consumption by five or more days a week.</p>

a) Vigitel: Chronic Disease Risk and Protective Factors Surveillance Telephone Survey; b) PNS: National Health Survey.

Table 1 – Prevalence of chronic non-communicable diseases and ultra-processed food, alcohol and tobacco consumption among the adult population (n=3,037), according to the National Health Survey and the Chronic Disease Risk and Protective Factors Surveillance Telephone Survey, Rio Branco, state of Acre, Brazil, 2019

Variables	Vigitel ^a		PNS ^b		Difference in percentage points
	n=1,812		n=1,225		
	%	95%CI ^c	%	95%CI ^c	
Sex					
Male	47.6	43.5;51.7	46.7	42.3;51.1	
Female	52.4	48.3;56.5	53.3	48.9;57.7	-0.9 ^d
Age (in years)					
18-24	17.9	15.3;20.9	18.1	14.8;21.8	-0.2 ^d
25-39	38.1	33.9;42.6	31.3	28.4;34.4	6.8 ^d
40-59	31.6	28.2;35.2	35.0	31.8;38.4	-3.4 ^d
≥60	12.4	10.9;14.0	15.6	13.2;18.2	-3.2 ^d
Race/skin color					
White	25.9	22.5;29.6	20.5	17.8;23.6	5.4 ^d
Black	6.7	4.5;9.8	7.6	6.0;9.5	-0.9 ^d
Asian	0.3	0.2;0.8	0.3	0.1;0.9	0.0 ^d
Brown	60.3	56.2;64.3	70.8	67.4;73.9	-10.5
Indigenous	0.8	0.4;1.6	0.8	0.4;1.6	0.0 ^d
Schooling (in years of study)					
0-8	31.0	26.8;35.6	28.5	23.9;33.6	2.5 ^d
9-11	38.2	34.5;42.0	38.8	33.3;43.0	0.6 ^d
≥12	30.8	27.7;34.1	33.4	29.6;37.5	-2.6 ^d
Diabetes mellitus					
No	95.1	93.6;96.1	93.9	92.4;95.1	
Yes	4.9	3.9;6.3	6.1	4.9;7.6	-1.2 ^d
Arterial hypertension					
No	81.5	78.8;83.9	79.5	76.6;82.1	
Yes	18.5	16.1;21.2	20.5	17.9;23.4	-2.0 ^d
Overweight					
No	43.4	39.4;47.5	41.8	38.4;45.3	
Yes	56.6	52.5;60.6	58.2	54.7;61.6	-1.6 ^d
Obesity					
No	76.7	73.0;80.0	79.9	76.6;82.8	
Yes	23.3	20.0;27.0	20.1	17.2;23.4	3.2 ^d

To be continued

Continuation

Table 1 – Prevalence of chronic non-communicable diseases and ultra-processed food, alcohol and tobacco consumption among the adult population (n=3,037), according to the National Health Survey and the Chronic Disease Risk and Protective Factors Surveillance Telephone Survey, Rio Branco, state of Acre, Brazil, 2019

Variables	Vigitel ^a		PNS ^b		Difference in percentage points
	n=1,812		n=1,225		
	%	95%CI ^c	%	95%CI ^c	
Smoking					
No	88.1	84.0;91.2	89.3	86.6;91.5	
Yes	11.9	8.8;16.0	10.7	8.5;13.4	1.2 ^d
Alcohol abuse					
No	82.3	78.3;85.8	84.4	81.7;86.8	
Yes	17.7	14.2;21.7	15.6	13.2;18.2	2.1 ^d
Consumption of five or more groups of ultra-processed foods on the day before the interview					
No	85.3	82.4;87.8	84.4	81.7;86.8	
Yes	14.7	12.2;17.6	15.6	13.2;18.2	2.1 ^d

a) Vigitel: Chronic Disease Risk and Protective Factors Surveillance Telephone Survey; b) PNS: National Health Survey. c) 95%CI: 95% confidence interval; d) Overlap of 95%CI between Vigitel and PNS.

Table 2 – Prevalence of chronic non-communicable diseases and ultra-processed food, alcohol and tobacco consumption stratified by sex among the adult population (n=3,037), according to the National Health Survey and the Chronic Disease Risk and Protective Factors Surveillance Telephone Survey, Rio Branco, state of Acre, Brazil, 2019

Variables	Male			Female		
	Vigitel ^a N=631	PNS ^b N=538	Difference in percentage points	Vigitel ^a N=1,181	PNS ^b N=687	Difference in percentage points
% (95%CI ^c)	% (95%CI ^c)	% (95%CI ^c)		% (95%CI ^c)		
Diabetes mellitus						
No	95.9 (93.8;97.1)	93.5 (90.3;95.6)		94.3 (92.3;95.8)	94.2 (92.3;95.7)	
Yes	4.1 (2.8;6.1)	6.5 (4.4;9.7)	-2.4 ^d	5.7 (4.2;7.7)	5.8 (4.3;7.7)	-0.1 ^d
Arterial hypertension						
No	85.1 (80.9;88.3)	82.6 (78.8;85.8)		78.3 (74.7;81.5)	76.8 (72.7;80.4)	
Yes	14.9 (11.6;19.0)	17.4 (14.2;21.2)	-2.5 ^d	21.7 (18.5;25.3)	23.2(19.6;27.3)	-1.5 ^d
Overweight						
No	42.0 (35.3;49.1)	40.5 (34.6;46.7)		44.6 (40.1;49.2)	43.0 (38.6;47.4)	
Yes	58.0 (50.9;64.7)	59.5 (53.3;65.4)	-1.5 ^d	55.4 (50.8;59.9)	57.0 (52.6;61.4)	-1.6 ^d

To be continued

Continuation

Table 2 – Prevalence of chronic non-communicable diseases and ultra-processed food, alcohol and tobacco consumption stratified by sex among the adult population (n=3,037), according to the National Health Survey and the Chronic Disease Risk and Protective Factors Surveillance Telephone Survey, Rio Branco, state of Acre, Brazil, 2019

Variables	Male			Female		
	Vigitel ^a N=631	PNS ^b N=538	Difference in percentage points	Vigitel ^a N=1,181	PNS ^b N=687	Difference in percentage points
	% (95%CI ^c)	% (95%CI ^c)		% (95%CI ^c)	% (95%CI ^c)	
Obesity						
No	76.7 (70.6;81.9)	83.2 (79.0;86.7)		76.6 (72.1;80.7)	77.0 (72.4;81.0)	
Yes	23.3 (18.1;29.4)	16.8 (13.3;21.0)	6.5 ^d	23.4 (19.3;27.9)	23.0 (19.0;27.6)	0.4 ^d
Smoking						
No	82.9 (74.9;88.7)	86.9 (81.3;91.1)		92.8 (90.2;94.8)	91.3 (88.8;93.3)	
Yes	17.1 (11.3;25.1)	13.1 (8.9;18.7)	4.0 ^d	7.2 (5.2;9.8)	8.7 (6.7;11.2)	-1.5 ^d
Alcohol abuse						
No	71.4 (64.0;77.7)	78.3 (73.8;82.3)		92.3 (89.7;94.3)	89.8 (86.7;92.2)	
Yes	28.6 (22.3;36.0)	21.7 (17.7;26.2)	6.9 ^d	7.7 (5.7;10.3)	10.2 (7.8;13.3)	-2.5 ^d
Consumption of five or more groups of ultra-processed foods on the day before the interview						
No	83.3 (78.2;87.4)	83.3 (78.7;87.1)		87.2 (83.8;89.9)	90.4 (87.8;92.5)	
Yes	16.7 (12.6;21.8)	16.7 (12.9;21.3)	0.0 ^d	12.8 (10.1;16.2)	9.6 (7.5;12.2)	3.2 ^d
Regular consumption of soft drink five or more days a week						
No	85.8 (80.0;90.1)	84.3 (79.8;87.8)		89.6 (85.8;92.4)	93.2 (90.6;95.1)	
Yes	14.2 (9.9;20.0)	15.7 (12.2;20.2)	-1.5 ^d	10.4 (7.6;14.2)	6.8 (4.9;9.4)	3.6 ^d

a) Vigitel: Chronic Disease Risk and Protective Factors Surveillance Telephone Survey; b) PNS: National Health Survey. c) 95%CI: 95% confidence interval; d) Overlap of 95%CI between Vigitel and PNS.

DISCUSSION

The analysis of 2019 Vigitel and PNS data showed that the prevalence related to NCDs, ultra-processed food consumption, alcohol abuse and smoking were similar, with overlapping 95%CI for the variables analyzed. Only the comparison of the prevalence of the race/skin color indicator showed a difference between the two surveys in relation to participants of Brown race/skin color, possibly related to difficulties regarding self-perception and self-declaration of this characteristic.¹³

Overlapping confidence interval for the prevalence of overweight and obesity suggests

that there are no differences in the comparison between the two surveys, and corroborates studies that suggest self-reported weight and height as valid measures to determine nutritional status.^{14,15}

We did not observe any differences between the prevalence of smoking and alcohol abuse, in this study. However, other investigations suggest that, because it is a survey, in which there is no eye contact, respondents may feel more comfortable answering sensitive questions such as those related to the consumption of licit drugs.^{16,17}

The similarities identified in the prevalence of ultra-processed food and soft drink consumption,

between both surveys, and in the prevalence of most of the variables evaluated in this study, are similar to those of another study that analyzed data from 2013 Vigitel and PNS surveys,¹² when the variables related to health and lifestyle in Brazilian capitals were compared.

This study has some limitations with regard to the method adopted by each of the surveys, this is the reason why the comparisons made are subject to possible biases of information and selection. There may be selection bias regarding Vigitel data, considering the need for landline coverage. Furthermore, it is worth highlighting the possibility of information bias due to the way Vigitel data was collected, by means of telephone interview, compared to PNS data collection. However, weighting methods were used and the differences in the information between the surveys showed overlapping 95%CI, and it can

be inferred that telephone survey results were similar to those of the face-to-face survey. These findings corroborate evidence from other studies, which did not observe statistical differences in the comparison of parameter estimation, based on telephone and face-to-face surveys, of chronic diseases such as hypertension and diabetes *mellitus*, and sociodemographic variables such as sex, age (in years) and schooling.^{18,19}

Estimates of the prevalence of NCDs, ultra-processed food consumption, alcohol abuse and smoking in Rio Branco, state of Acre, in 2019, overlapped in both the Vigitel and PNS suggesting that even for the most distant regions from large centers and with low landline coverage such as the municipality of Rio Branco, telephone surveys may be a more cost-effective option when compared to face-to-face surveys.

AUTHORS' CONTRIBUTION


Lima YMM collaborated with the study conception, data interpretation, drafting and critical reviewing of the intellectual content. Martins FA collaborated with data interpretation and critical reviewing of the intellectual content. Ramalho AA collaborated with the conception, analysis, data interpretation and critical reviewing of the intellectual content. All authors have approved the final version and have declared themselves to be responsible for all aspects of the work, including ensuring its accuracy and integrity.

CONFLICTS OF INTEREST

The authors declared that they have no conflicts of interest.

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